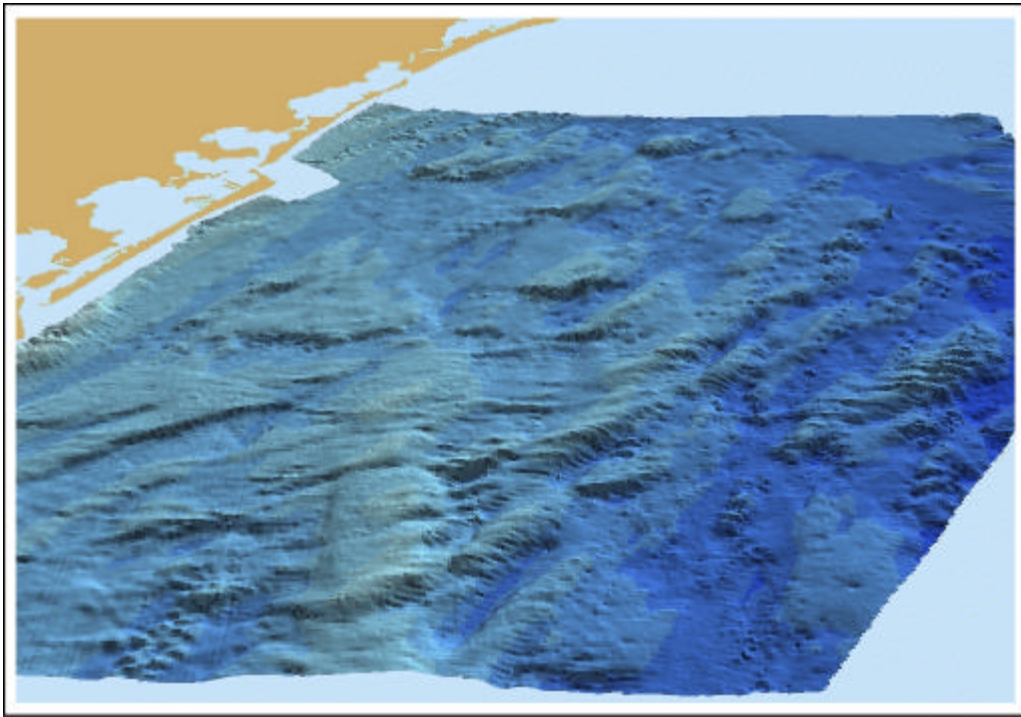


**FINAL REPORT  
EXAMINATION OF REGIONAL MANAGEMENT STRATEGIES FOR FEDERAL  
OFFSHORE BORROW AREAS ALONG THE UNITED STATES EAST AND GULF OF  
MEXICO COASTS**



**Prepared for:  
International Activities and Marine Minerals Division  
Minerals Management Service  
U.S. Department of Interior  
Herndon, Virginia**

**Under Contract Number 14-35-0001-31051**

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FEDERAL OFFSHORE BORROW AREAS  
ALONG THE UNITED STATES EAST AND GULF OF MEXICO COASTS**

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October 2001

## DISCLAIMER

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# **EXAMINATION OF REGIONAL MANAGEMENT STRATEGIES FOR FEDERAL OFFSHORE BORROW AREAS ALONG THE UNITED STATES EAST AND GULF OF MEXICO COASTS**

## **1.0 INTRODUCTION**

The Minerals Management Service (MMS) International Activities and Marine Minerals Division (INTERMAR) is charged with environmentally responsible management of Federal Outer Continental Shelf (OCS) sand and gravel resources. These resources lie seaward of the State/Federal boundary. Public Law 102-426 (43 U.S.C. 1337(k)(2)), enacted 31 October 1994, gave MMS the authority to negotiate, on a noncompetitive basis, the rights to OCS sand, gravel, and shell resources for shore protection, beach or wetlands restoration projects, or for use in construction projects funded in whole or part by or authorized by the Federal government. In 1999, that law was amended to prohibit charging State and local governments a fee for using OCS sand resources, although competitive leasing and fees remain for other uses, including commercial recovery of offshore sand and gravel for use as construction aggregate.

As the demand for sand for shoreline protection increases, OCS sand and gravel will become an increasingly important resource. Between 1995 and September 2001, MMS conveyed over 14,600,000 cubic yards of OCS sand for ten projects. It should be noted that projects are initiated by the beneficiaries of the resource; MMS does not propose leases for OCS sand resources. MMS's mission is to make timely, streamlined, and environmentally sound and fiscally responsible decisions to access OCS sand resources. To support their mission, they have formed cooperative agreements with ten States to identify and evaluate OCS sand resources as potential sources for future beach nourishment projects. As of 2001, MMS has provided \$4.6 million in funding to support geological and geophysical studies to identify and quantify OCS sand sources. The status of these inventory studies and copies of available reports for the nine States (Alabama, Delaware, Florida, Louisiana, Maryland, New Jersey, North Carolina, South Carolina, Texas, and Virginia) are posted on the INTERMAR web site ([www.mms.gov/intermar/marineac.htm](http://www.mms.gov/intermar/marineac.htm)).

MMS expects that some OCS sand resources will be long-term sources of sand borrow material for coastal erosion management because of:

- The general diminishing supply of onshore and nearshore sand;
- The renourishment cycles for beaches or coastal areas requiring quantities of sand not currently available from State sources; and
- The need for access to large sand inventories for immediate/emergency repair of beaches and coastal damage from severe coastal storms.

MMS has developed guidelines for those interested in obtaining leases to develop OCS sand resources (Giordano et al., 1999; available at <http://www.mms.gov/intermar/marineac.htm>). As steward for these resources, MMS must ensure that any use of OCS sand resources will not adversely affect the marine, coastal, and human environments. Under the National Environmental Policy Act (NEPA), an environmental assessment or environmental impact

statement (prepared by either MMS or another Federal Agency) is used to evaluate whether or not to issue a lease. MMS has taken an active role in identifying the potential environmental impacts of dredging OCS sand by conducting baseline studies of selected OCS regions and funding research on specific areas of concern. Table 1 lists the studies funded by MMS under this program; the studies are available at [www.mms.gov/intermar/environmentalstudiespage.htm](http://www.mms.gov/intermar/environmentalstudiespage.htm).

**Table 1.**Environmental studies on OCS sand resource issues funded or supported by MMS.

<b>Site-Specific Environmental Baseline Studies</b>
Environmental Surveys of Potential Borrow Areas Offshore Northern New Jersey and Southern New York and the Environmental Implications of Sand Removal for Coastal and Beach Restoration. Draft report Spring 2003. Final Report Winter 2003
Environmental Surveys of Potential Borrow Areas on the East Florida Shelf and the Environmental Implications of Sand Removal for Coastal and Beach Restoration. Final Report May 2002
Collection of Environmental Data within Sand Resource Areas Offshore North Carolina and the Environmental Implications of Sand Removal for Coastal and Beach Restoration. Final Report Winter 2001
Surveys of Sand Resource Areas Offshore Maryland/Delaware and the Environmental Implications of Sand Removal for Beach Restoration Projects. OCS Study MMS 2000-055
Environmental Surveys of OCS Sand Resources Offshore New Jersey. OCS Study MMS 2000-052
Environmental Survey of Identified Sand Resource Areas Offshore Alabama. OCS Study MMS 99-0052
Use of Federal Sand Resources for Beach and Coastal Restoration in New Jersey, Maryland, Delaware and Virginia. OCS Study MMS 99-0036
Environmental Studies Relative to Potential Sand Mining in the Vicinity of the City of Virginia Beach, Virginia. OCS Study MMS 97-0025
<b>Wave Modeling/Shoreline Erosion</b>
A Numerical Modeling Examination of the Cumulative Physical Effects of Offshore Sand Dredging for Beach Nourishment – New Jersey, Virginia, North Carolina, Florida. Final Report Winter 2001
Wave Climate and Bottom Boundary Layer Dynamics with Implications for Offshore Sand Mining and Barrier Island Replenishment, South-Central Louisiana. OCS Study MMS 2000-053
Wave Climate Modeling and Evaluation Relative to Sand Mining on Ship Shoal, Offshore LA, for Coastal and Barrier Islands Restoration. OCS Study MMS 96-0059
A Methodology and Criteria to Assess the Impact of Sand Volume Removed in Federal Waters on the Offshore Wave Climate. OCS Study MMS 99-0046
<b>Generic Studies Applicable to all Offshore Marine Mineral Efforts</b>
Model Development or Modification for Analysis of Benthic and Surface Plume Generation and Extent During Offshore Dredging Operations. Final Report 2002
Integrated Study of the Biological and Physical Effects of Marine Aggregate Dredging. Final Report Fall 2001
Study of the Cumulative Effects of Marine Aggregate Dredging. OCS Study MMS 99-0030
Marine Aggregate Mining Benthic and Surface Plume Study. OCS Study MMS 99-0029
Impacts and Direct Effects of Sand Dredging for Beach Renourishment on the Benthic Organisms and Geology of the West Florida Shelf. OCS Report MMS 95-0005
Marine Mining Technologies and Mitigation Techniques. A Detailed Analysis with Respect to the Mining of Specific Offshore Mineral Commodities. OCS Report MMS 95-0003
Synthesis and Analysis of Existing Information Regarding Environmental Effects of Marine Mining. OCS Report MMS 93-0006



Most of the research to identify OCS sand resources has focused on bathymetric highs, described as sand shoals, ridges, and banks (RPI et al., 2001). It appears that, because of their distance from shore (3 miles for most states) and water depth (typically 30-60 feet), these features appear to be isolated from the sediment budget of the littoral system by large distances and muddy areas (the latter indicating the absence of a sand transport pathway), though this will not always be the case. Their isolation from the active littoral system reduces the possibility of interrupting a sediment supply pathway to the shoreline, but it also prevents replacement of sand removed during dredging. Thus, OCS sand should be considered as a potentially non-renewable resource that needs careful management so that it is used appropriately.

Now, in the early stages of resource utilization, is the time to establish the mechanisms for long-term management of this resource. MMS identified the need to formulate options and recommendations for including Federal, State, and local governments and other stakeholders in an overall planning process to manage the Federal offshore borrow sites in an environmentally responsible and cost-effective manner over the long term. MMS is assessing the feasibility of a regional sand management approach to improve coordination among the relevant regional parties, organizations, and agencies with interest in the use of OCS sand resources for beach and coastal restoration. Important objectives of the MMS program are the demonstrated cost savings and value added benefits that can be achieved through regional management.

The key management issues are summarized below:

- There are numerous jurisdictions, authorities, consultations, etc. that must be addressed.
- Multiple entities may wish to access an OCS borrow site repeatedly over time, on a long-term, even continual basis.
- Currently, each OCS dredging project is considered on a case-by-case, project-specific basis.
- There are opportunities to make the process more efficient and reduce the time and costs for permitting and planning, as well as the costs of operations and monitoring.
- Even with the ongoing environmental studies funded by the MMS and other entities, there remain questions about the environmental impacts (especially long-term, cumulative) that could result from dredging of OCS borrow sites.

Research Planning, Inc. (RPI) was contracted to assist MMS in determining the feasibility of developing regional OCS sand management strategies. The project consisted of the following steps. The first step was to identify two areas where pilot studies could be conducted to solicit input from stakeholders on how to best achieve the above objectives. The two areas would represent different: physical and biological settings, technical issues, environmental concerns, interested parties, and agency policies on the issues. Key agencies and staff in each area were identified and contacted to discuss their perspectives on what kind of management strategies would be most appropriate. The next step was to conduct a one-day workshop in each area and identify the key issues and concerns about use of OCS sand resources. Appendix A contains the presentation made by MMS at the two workshops, outlining their issues and objectives. All of the information obtained from discussions with MMS staff, agency

representatives, and at the workshops was formulated into a set of recommendations and a framework for managing OCS sand resources. Once the basic framework is accepted, Year 2 project activities will include identifying geographic areas and participants that should be on a "sand management task force", developing organizational charters and materials for each sand management task force, and providing them with technical support during initial meetings. This report presents the results of the two workshops and recommendations on best how to achieve the overall objectives of OCS sand management.

## **2.0 REGIONAL MANAGEMENT STRATEGY WORKSHOPS**

MMS selected two States in which to conduct workshops with Federal, State, and local government representatives to assess the feasibility of a regional management approach for OCS sand. New Jersey was selected as a State with a strong beach nourishment program and many nourishment projects funded by the U.S. Army Corps of Engineers (USACE). Texas was selected as a State that was just starting a state-wide program and where, historically, beach nourishment projects were funded mostly by local government agencies. The results of these two workshops are summarized below. This section also includes a short description of the Regional Sediment Management Program being developed by the USACE because of its relevance to MMS objectives.

### **2.1 Texas Workshop**

A workshop was held in Houston, Texas on 1 May 2001. A list of participants is included in Appendix B. The State of Texas has recently initiated a program with funding from the Coastal Erosion Planning and Response Act. The goals of this program are to:

- protect habitats
- resolve environmental issues
- cover long-term needs
- avoid controversial issues that delay projects
- achieve realistic results

The State needs an inventory of long-term needs and available sand sources for coastal protection for the next 50 years. There are serious erosion problems from the Louisiana border to San Luis Pass, including protection of the McFadden National Wildlife Refuge, re-building of state highway 87, and nourishment of the recreational beaches in the Galveston Island area. The Texas Bureau of Economic Geology has an active shoreline monitoring program that projects the position of the shoreline 60 years in the future. MMS recently signed a cooperative agreement with the Texas Bureau of Economic Geology to compile existing information on OCS sand resources. Two offshore sand shoals (Sabine and Heald Banks) could provide significant sand resources (estimated to be nearly 2 billion cubic meters of sand and muddy sand), however, they are located significant distances offshore (20 miles south of Sabine Pass and 56 miles east of the entrance to Galveston Harbor) (Morton and Gibeau, 1993). Researchers at Rice University have identified incised river valleys and other paleo-shorelines closer to shore that contain significant volumes of sand (Rodriguez et al., 1999). Because of the costs of double handling sand from

distant borrow sites, the emphasis for now is on nearshore sites, including those that might be covered by a muddy overburden. It was agreed that one of the highest priorities was an inventory of suitable offshore sand resources, including banks, paleo-channels, and paleo-shorelines.

Because Sabine Bank and other offshore sand resources straddle the Texas/Louisiana border, the State of Louisiana has a strong interest in this offshore area. With a sand-starved and subsiding coastline, their approach is to bring in sand by: 1) re-establishing alluvial processes (e.g., river diversion projects by breaching of levees); and 2) dredging offshore sand. They need to re-establish the barrier islands to protect the estuarine systems of bays and marshes and prevent the loss of cheniers that, once gone, would result in rapid erosion of the marshes behind them. At Holly Beach, Louisiana (close to the Texas border), feasible sand sources include buried paleo-channels that extend 1-5 miles offshore. Relict sheet sands, paleo-channels, and banks such as Ship Shoal are all being evaluated as sand sources. Although there are significant differences in the erosion problems and solutions sought between the two States, it was clear that OCS sand will be considered as part of the long-term solution to habitat protection in both States. Louisiana Department of Natural Resources has, in fact, already contacted MMS regarding a negotiated lease to use Sabine Bank for a planned Holly Beach nourishment project.

The USACE is starting a feasibility study, with Jefferson and Galveston Counties as local sponsors, to identify suitable offshore areas for beach nourishment sand and develop other potential solutions. Cost-effectiveness is an issue for the USACE because they have to justify costs relative to benefits. If the costs were too high (because of distance offshore), their participation would be in jeopardy.

Oil and gas infrastructure poses serious issues with development of OCS sand. Appendix C includes a copy of a MMS presentation on this topic. There are 50,000 km of pipelines, 4,005 active platforms (with an associated 13,110 wells), and 2,018 removed platforms (with 22,965 wells plugged and abandoned) in the Gulf of Mexico OCS. Because data on pipeline and well location are old and imprecise, site clearance surveys and buffer zones (both for physical avoidance and preservation of substrate stability around the feature) will be needed. If borrow sites were identified and cleared, there is the potential that installation of new pipeline could become a conflict in the future use of a borrow site.

Representatives from the National Marine Fisheries Service (NMFS) pointed out that there were likely significant fisheries associated with banks such as Sabine and Heald Banks. These bathymetric highs are fishing hot spots. NMFS is presently conducting studies of banks in other locations to determine if they should be considered as essential fish habitat (EFH) for certain species of juvenile fish in the Gulf of Mexico. Fishery and marine mammals issues would be identified as part of the EFH and Endangered Species Act consultation process during preparation and review of the environmental assessment or environmental impact assessment.

Key points on the concept of a regional management strategy resulting from the Texas meeting include:

- Any coordinated management effort should include both Federal OCS and State sand resources.

- The State should take the lead.
- The planning timeframe should be 50 years.
- A comprehensive inventory of sand needs (including the impacts related to relative sea-level rise) and sources is essential. Without this information, there is no basis for developing management strategies.
- Because of costs, inshore sand resources will be exhausted first.
- The plan should include an adaptive management approach that uses monitoring and routine re-appraisal to re-direct efforts and priorities.
- The process should not become so big and cumbersome that it slows down beach nourishment projects.
- It should not become a bureaucracy that involves a lot of time attending meetings.
- Federal/State/local cost sharing will be needed in all phases of data collection, monitoring, and management.

## **2.2 New Jersey Workshop**

A workshop was held in Trenton, New Jersey on 30 May 2001. A list of participants is included in Appendix D. Through a cooperative agreement with MMS, the State has conducted an extensive inventory of beach erosion along the entire coast of New Jersey and identified areas where sand for future nourishment would be needed most. Their goal is to catalog all resources with >500,000 cubic yards, identify sites other than bathymetric highs, and fill data gaps within the next five years. They plan to identify sand sources to meet their needs for the next 50 years. Until recently, they considered OCS sand as an emergency source only. Now, they know that there is not enough sand inshore (particularly in the southern parts of the State), and the good inshore sand sources are also important areas for the valuable commercial surf clam fishery.

The State takes the lead as the local sponsor for all beach nourishment projects. They have a good funding base (\$25 million per year) to conduct their own studies and set priorities. There is very close coordination between the State and USACE through regular Joint Permit Processing meetings. There is a Task Force that meets annually to review and evaluate the geological studies and inventory of sand sources and needs. They are very successful at coordinating use of equipment for dredging, coring surveys, and environmental studies. The State takes the administrative lead for these meetings.

The potential impact of dredging on the commercial surf clam fishery is an important issue. The State is conducting a three-year, post-dredging study of the recruitment of surf clams in dredged areas (to be completed in 2003). They hope to develop optimum dredging strategies to speed the recovery of benthic communities. Most of the shoal features are prime fishing areas and thus good fish habitat. Fisheries staff suggested a more holistic approach to the problem, using alternative methods of erosion control and better use of dredged sand, to extend the life of the beachfills and reduce the frequency of dredging. It was noted that the biological monitoring studies program was not as well coordinated as the geological studies program. The State felt that they were not getting the best value from the biological monitoring projects and needed more coordination with data interpretation and findings. In particular, the biological monitoring program had inadequate funding for any planning/coordination functions or data synthesis;

funding was only available to conduct studies and prepare study-specific reports. There is no mechanism for bringing together of various stakeholders for data review and discussion of the results from different perspectives. There is no plan for synthesis of all available data and open discussion of how these data might be applied to other sites, or how new monitoring programs should be designed to address key unanswered questions. It seems that each biological monitoring study begins “from scratch”.

MMS has funded studies to gather benthic biological data and wave transformation analysis to look at impacts of proposed dredging on the shoreline in each of the seven potential sand borrow areas evaluated by the cooperative program in New Jersey (Byrnes et al., 2001). The work included extensive and repetitive biological sampling in each of the areas and wave modeling to determine what impacts the removal of sand would have on the surrounding areas and adjacent parts of the coast. MMS also funded an environmental report identifying and synthesizing all available information, environmental issues, and possible mitigation measures for the use of sand from the Federal OCS for future beach nourishment for the mid-Atlantic region (Louis Berger Group, 1999). A new MMS-funded study, initiated in FY2001, is looking at the biology and physical characteristics of northern New Jersey, off Monmouth County.

The USACE New York District conducted a comprehensive study of three offshore borrow sites, that included field surveys of benthic communities, fish populations, and trophic transfer for three years pre- and two years post-dredging (Burlas et al., 2001). For the offshore borrow sites, species abundance, biomass, and composition returned to undredged conditions within 1.5 to 2.5 years. For fish in the borrow areas, there was no substantive difference in species composition or catch-per-unit-effort among areas within any given collection period. Analyses of stomach contents for both winter and summer flounder indicated no substantive change in the diet of either species. The results of this study, although very important, may be applicable only to this portion of the Atlantic coast and may not be true for other areas.

Archaeological resources, primarily shipwrecks, are an important issue in the waters off New Jersey because of their protected status and high level of recreational use by sport divers. Sites show up on side-scan sonar and magnetometer surveys with certain signatures that indicate or suggest a shipwreck or other historical feature. The sites are usually protected in place by establishing an avoidance zone. The State is developing "best practices" approaches for identifying and protecting shipwrecks at borrow sites. The sport diver community is very active and reports on any impacts on sites after dredging. Thus, the locational accuracy of the actual dredging operation is very important. MMS has a proposed study for initiation in FY2002, to examine buffer zones relative to dredging operations.

Artificial reefs are another potential concern. All fourteen artificial reef sites in New Jersey are in Federal waters. It was recommended that MMS should review permits for placement of artificial reefs because the designated sites could cover and limit access to sand and gravel resources.

Key points on the concept of a regional management strategy resulting from the New Jersey meeting include:

- A strong State, with adequate funding, provides the best basis for successful planning.
- Good geological data identifying sand sources and volumes and a sand budget identifying long-term needs are required to begin the planning process.
- Task forces or working groups are effective when members have funding to work the project, are personally involved in the work, and know there is a long-term commitment to the program. Therefore, the regional management effort should be formalized through cooperative agreements.
- There is a need to integrate monitoring study results and data interpretation, so that consensus can be reached on findings, and future monitoring requirements can be modified to reflect the most current understanding of the types and duration of impacts. New understanding of impacts learned from monitoring studies needs to be incorporated into resource management decisions.
- Long-term monitoring will be required for 50-year projects because it is not possible to predict the future impacts over that period. The types of monitoring will change over time, reflecting information and understanding gained from on-going studies.
- Meetings are very valuable for coordination and information exchange, particularly if they are focused.
- MMS, with its broader perspective, should be the clearinghouse for environmental impact studies and results.
- Dredgers should be participants, to understand the issues and concerns and promote exchange of ideas and solutions.

## **2.3 The USACE Regional Sediment Management Program**

In the past, the USACE has focused on managing sand at coastal projects on a project-by-project basis. This approach to sand management may not adequately consider the impact of individual projects on down drift projects. To address this issue, the USACE initiated efforts to assess the benefits of managing sediment resources as a regional scale resource rather than a localized project resource. In October 1999, the Mobile District initiated the USACE Northern Gulf of Mexico Regional Sediment Management (RSM) Demonstration Program. The goal of the demonstration program is to change the paradigm of project specific management to focusing on a regional approach in which the USACE as well as state and local agencies stop managing projects and begin "managing the sand." The objectives of the demonstration program are:

- Implement Regional Sediment Management practices;
- Improve economic performance by linking projects;
- Development of new engineering techniques to optimize/conserves sediment;
- Determine bureaucratic obstacles to Regional Sediment Management; and
- Manage in concert with the environment.

The product of the RSM demonstration program is a Regional Sediment Management Plan consisting of a calibrated regional sediment budget, a calibrated numerical regional prediction system, and a regional data management and Geographic Information System. These tools will assist in making management decisions and increase benefits resulting from improved sand management throughout the region.

The USACE Regional Sediment Management program is focused on 1) coordinating and setting standards for data collection, reduction, storage, and distribution to meet the needs multiple users, to encourage efficiency and maximum value, 2) optimizing equipment utilization for multiple projects where feasible, and 3) keeping the sediment within the littoral system, emphasizing beneficial uses of dredged material rather than disposal offshore. The results of the demonstration project by the Mobile District will be used to expand the concept of regional sediment management planning to other districts.

The RSM program will not, however, address all of the issues of concern to MMS in its charge of environmental management of OCS sand resources. OCS sand would be considered as a resource that could contribute to the sand budget along a shoreline. Assuming that the RSM program gets funded in other USACE Districts, this program could provide both funding and administrative resources for some of the activities that apply to both USACE and MMS objectives. In particular, increased cost effectiveness through better coordination among projects is a major objective of the RSM program.

### **3.0 A FRAMEWORK FOR MANAGING OCS SAND RESOURCES**

#### **3.1 Introduction**

Based on discussions with MMS, agency representatives, and other stakeholders, it is clear that MMS needs a strategy for managing offshore sand and gravel resources in the public's trust. The question is, How should the resource be managed? There are multiple agencies with overlapping jurisdictions, differing objectives, limited staff resources, and highly variable technical skills. Decisions are not made solely on policy, technical, or economic considerations. Rather, they are made on a combination of all of these considerations, and in light of the current understanding of the relative importance of each and the magnitude of trade-offs among impacts and benefits. Not all beach nourishment projects are driven by the economics of tourist visitations or protection of private development. Sand placement on shorelines also protects important coastal habitats, fishery resources, and wildlife. Each State faces a different combination of issues, and resource managers strive to consider all costs and benefits.

One successful model to follow is the organization set up under the Oil Pollution Act of 1990 (Public Law 101-380-August 18, 1990) to support oil spill contingency planning and emergency response on the local level. Specifically, an Area Committee is established for each area; for the coastal zone, an Area Committee is established for each of the 46 U.S. Coast Guard Captain of the Port zones, and for the inland zones, for each of the ten U.S. Environmental Protection Agency Regions. Members include qualified personnel of Federal, State, and local agencies, local industries, and other interested parties such as environmental groups. The Area Committee is responsible for preparing an Area Contingency Plan and working with Federal, State, and local officials to develop procedures and approvals to improve the overall response to spills in the Area. The Area Committees identify sensitive areas, develop protection priorities, approve the use of certain types of response methods, provide procedures for obtaining expedited decisions regarding the use of chemical countermeasures, etc. The results of these activities are

published in the Area Contingency Plan, and the plan is updated periodically. Area Committees evaluate a wide range of technical information to make regulatory and policy decisions that involve trade-offs among diverse resource concerns. They regularly review and interpret new information (e.g., research results, spill case histories, presentations by technical experts) and modify procedures to improve resource protection during spill emergencies. Information is shared among Area Committees and Regional Response Teams, especially where one group has developed a new protocol or decision-making tool that can be used as template by others.

### **3.2 Elements, Goals, and Activities**

A planning process for offshore sand management could follow a similar organizational framework as described above. The elements, goals, and activities of the process are outlined below.

#### **Elements**

- It is a formalized process for planning, decisionmaking, and coordination among stakeholders.
- It is pro-active; it identifies potential problems, collects data needed to address the problems, then uses the results to propose and implement needed solutions.
- It requires a level of commitment, by each organization and the individuals assigned to participate in the process, to be involved on a long-term basis.
- It promotes information sharing among stakeholders through open meetings where issues can be raised and discussed.
- It provides a mechanism for making decisions, setting priorities and goals, and resolving issues through discussion, data collection and interpretation, and consensus building.
- It produces results, by identifying key data gaps, developing study plans to fill those data gaps, and reaching conclusions about results.

#### **Goals**

- Avoid or minimize the environmental impacts to OCS sand borrow sites that may represent long-term sources of sand for coastal communities.
- Reduce the time and costs to efficiently access OCS borrow sites.
- Promote coordination among beach nourishment/coastal restoration projects to maximize cost-effectiveness.
- Allow for adaptive management, learning from past projects to better manage future projects.
- Evaluate the current process for planning, implementing, and coordinating beach nourishment projects, and identify problem areas. Set priorities for working on problems.



Based on discussions with local, state, and federal stakeholders involved in beach nourishment projects, the following issues were identified as possible sand management activities:

- Compile inventory of projected sand needs from all entities in the region of interest, based on analysis of the sediment budget for the total system.
- Compile inventory of known sand resources available, including both nearshore and offshore sand borrow sites.
- Identify critical data gaps (environmental/resource) and recommend actions to address these gaps.
- Develop guidelines for sand resource allocation (volume available versus short- and long-term needs). The objective is to preclude future "sand wars", as well as define appropriate uses of available sand resources.
- Develop and keep updated a master schedule of proposed sand dredging plans.
- Evaluate strategies for permit streamlining.
- Develop procedures for accessing sand under emergency conditions.
- Establish monitoring requirements and recovery endpoints.
- Develop techniques for dredging that maximizes use of the site and minimizes impacts, by testing different methods (e.g., dredging in strips that leave undisturbed areas to promote rapid recruitment; designating specific sites or types of sites as preferred dredging zones, to concentrate impacts in more restricted areas, etc.).
- Identify time windows that are best/worst time for dredging to protect sensitive species.

### **3.3 Institutional Issues**

Federal, State, and local government agencies have various responsibilities, authorities, interests, and roles in coastal erosion and habitat protection associated with beach nourishment projects. These agencies function within regulatory, institutional, and financial constraints that greatly affect how they might participate in regional management, as outlined below.

The USACE historically has been limited in its ability to be proactive in developing regional strategies because their funding comes from Congress as specific authorizations for projects in specific areas. However, the USACE is a key player in beach nourishment projects. Ideally, they should be active participants and provide funding to support the types of regional studies needed to develop inventories of sediment sources and long-term sediment needs.

The National Marine Fisheries Service (NMFS) often cannot be an active participant because of personnel resource limitations. They prefer that their input be sought through the established protocols of consultation through the NEPA process. However, because many of the potential OCS borrow sites are likely to be designated as essential fish habitat, NMFS participation in developing a regional strategy will be extremely important to the discussion of impacts, trade-offs, and mitigation strategies. Fishery Management Councils may be able to take on some of the responsibility for dealing with commercial fishery issues.

In the past, MMS has signed leases to use OSC sand resources one at a time. They have not committed to or signed long-term leases, as a matter of policy so far. Yet, integral to a regional management strategy is the identification of known and accessible sand resources. There has to be some commitment that the OCS sand resources will be available, as long as environmental impacts can be mitigated. MMS is currently evaluating longer-term agreements and leases, where this option is feasible.

States vary widely in their level of funding (and thus ability to provide leadership) for coastal erosion programs. Strong States have long-term funding and coordinated, State-level programs with which they can support the staff and research needed to proactively develop and implement sand management programs. In these States, MMS will have strong partners who will take the lead. States without such resources will require a higher degree of involvement by MMS. For other States, the beach management programs are organized at the county level, meaning that MMS will have to deal with multiple organizations that have a more narrow focus on local, rather than State-wide issues.

### **3.4 Specific Recommendations for OCS Sand Management**

Considering all of the information obtained during this project, the following recommendations are offered to guide MMS in developing a planning process for managing OCS sand resources.

#### **1. Regional management of sand resources is feasible and essential to the MMS goals for managing OCS sand resources in a cost-effective and environmentally sound manner.**

Increased demand for OCS sand has triggered a need to manage the resource. Now that there are multiple potential users for sand from a single site, resource allocation becomes an issue. Frequent use raises concerns about the ability of the ecosystem to recover between dredging events, as well as long-term cumulative impacts. Coordination among users could reduce all types of costs, from mobilization to monitoring. Other Federal agencies, States, and local governments clearly look to MMS to provide leadership and guidance on both policy and technical issues. They also expect to be active participants in decisions about any restrictions or costs associated with accessing the sand.

**2. Generally, the "region" should consist of a single State.**

States differ in the types of beach erosion problems, approaches to solve them, amount of data available, level of state involvement and commitment, etc. It would be an added level of difficulty to try to engage more than one state in the process. The exception will be for specific borrow sites that straddle state lines, and these sites would have to be handled on a case-by-case basis.

**3. Regional management efforts should start in those States that can provide a strong State Lead AND have already identified a need for OCS sand resources.**

MMS is limited by the small size of the INTERMAR division. They cannot take on the administrative burdens of coordination and logistics for 9+ regions. Furthermore, it would be more cost effective to work with agencies that have the resources and commitment to develop a successful approach that will be a model for future efforts. For example, the success of the early coordination efforts of the geological Task Force in New Jersey is already recognized as a model that should be followed for biological assessments there. Another factor is the degree of interest in accessing OCS sand resources. Because of the high costs of handling sand over long distances, inshore sources of sand are considered to be more economically feasible. However, there other factors that might out-weigh the cost factor, such as not interfering with the littoral transport system (thus having to dredge offshore beyond wave base), environmental concerns about continual dredging in the nearshore region, and changes to wave conditions resulting from increased depths nearshore.

**4. MMS should build on existing geological "Task Forces" in each State, letting them evolve into a State/MMS Sand Management Task Force.**

MMS has already established task forces or State/MMS cooperatives to collect geological data and identify promising OCS sand resources in nine states. These established relationships can be the basis for expanded responsibilities of a Sand Management Task Force (SMTF). Compiling inventories of needs and sources is the first step in the process and needs to be completed before addressing other issues.

The relationship between the Sand Management Task Force and the USACE RSM program will have to be addressed in each region, depending on the stage of development of each. The RSM program currently emphasizes collection of data on sediment budgets and focuses more on operational issues. The MMS objectives for cost effectiveness and efficiency match closely with those of the RSM. There should be good cross-coordination between the two groups where they are both active.

**5. MMS should expand its role in sponsoring and co-sponsoring workshops and developing synthesis documents and guidelines on technical and policy issues for managing offshore sand resources.**

MMS has already started this process with a special session at the January 2002 Gulf of Mexico Information Transfer Meeting and the publication of the papers from the meeting in the

Journal of Coastal Research. It is also recommended that MMS sponsor smaller, half-day or one-day meetings on specific topics where researchers can informally discuss their results and work toward the development of findings and conclusions. These meetings could be coordinated with other scheduled meetings or conferences. MMS could arrange for 1-2 experts to participate in the meetings, as appropriate for the selected topic.

MMS has traditionally emphasized publication of study results in peer-reviewed journals to provide scientific credibility to the study results. There should be parallel efforts to generate and disseminate in a timely manner non-peered-reviewed technical documents that represent current approaches, guidelines, policies, findings, etc. MMS could take the lead on developing technical synthesis reports on the current state of knowledge on selected topics. These reports would be 2-5 page technical summaries on topics where there is general consensus on findings. Their production could be triggered by the completion of a major study, or the consensus reached at one of the smaller meetings discussed above. MMS could synthesize the guidelines developed by more advanced SMTFs and make them available on their web site as templates for use by others. This role of providing a mechanism for sharing of experience and building on previous efforts (rather than having to start from ground zero) is appropriate for a Federal agency with a broader perspective and contact with multiple agencies. The small size of the INTERMAR division limits the amount of personnel involvement they can commit to. Yet, it is clear that, through cooperative agreements, MMS can achieve significant cost effectiveness and value-added benefits, as demonstrated by the progress made in geological studies to identify and quantify OCS sand resources in the priority states.

**6. MMS should become the clearinghouse for studies and findings on environmental impacts associated with offshore dredging relative to OCS/Federal borrow areas and use its web site to better disseminate this knowledge.**

MMS should take leadership role in managing and coordinating environmental studies on the impacts of offshore dredging of OCS borrow sites. The costs of environmental monitoring of offshore areas are high, thus the study results need to be widely disseminated to all interested parties in a form that is useful to them. The National Research Council report on Managing Troubled Waters: The Role of Marine Environmental Monitoring (NRC, 1990) noted that "not only must data be gathered, but attention must also be paid to their management, synthesis, interpretation, and analysis" and "adequate resources are needed not only for data collection but also for detailed analysis and evaluation over the long term." MMS has followed these guidelines for their own studies, by producing and widely distributing reports at several technical levels (e.g., executive summaries, technical summaries, non-technical summaries, detailed reports). Yet there is a need for better dissemination of all environmental monitoring data for offshore areas, and the Internet can be an effective means of accomplishing this goal.

As a first step, INTERMAR should re-design its web site to increase its functionality and use. The site should include only information on offshore sand and gravel resource issues and be designed around the following themes:

**I. Mission Statement, Objectives**

- II. Information for users interested in obtaining leases to develop OCS sand resources
  - A. Guidelines Report (excellent introduction into the process)
  - B. Maps and short descriptions of the currently known locations and volumes of known sand resources (so users could find out if there are sand sources near their areas)
  - C. Past, current, and potential future leases (so users could see who has accessed sand in the past, and find out about current and future plans in adjacent areas)
- III. Environmental Impacts of OCS Dredging Activities
  - A. Biological Monitoring Study Reports
    - List of relevant studies (not just limited to MMS-funded studies), with html text for the Technical Summary, key figures from the report, and point of contact, and a link for downloading the full report
    - Summaries of technical workshops on related topics
    - Protocols for conducting biological monitoring
    - Other sections as needed
  - B. Physical Monitoring Study Reports (waves, shoreline erosion, bathymetric change)
    - same as above
  - C. Other Related Impact Reports
    - same as above
- IV. Environmental Assessments/Environmental Impact Statements
  - Copies of previous EA/EIS, to facilitate environmental impact assessment for new leases
- V. Cooperative Agreements with State and Federal Agencies
  - Updated versions of the current pages for activities with each State
  - Add MOAs for USACE and other Federal agencies as established
- VI. Upcoming Events (meetings, conferences, etc.)
- VII. Links to Related Sites

There should be a site index and the ability to search the site using key words.

A well-designed and regularly updated web site could achieve many of the MMS objectives, in terms of providing value-added benefits through sharing of information and findings among states. The MMS INTERMAR web site should become the best site for getting the most current, technical and policy information on offshore sand and gravel resources.

**7. MMS should continue to play a lead role in the design and funding of long-term monitoring studies.**

Monitoring studies are extremely expensive to conduct in offshore waters. There are never enough data to fully characterize all potential impacts. Of particular concern are potential long-term impacts associated with repeated dredging of a site. Therefore, monitoring programs have to be well-designed, cost-effective, and funded over long enough periods to produce definitive results. Funding is one of the key problems because no one agency or group has

enough resources to fund monitoring programs. When there are multiple users of a site, responsibility for monitoring becomes even more complicated.

Monitoring costs need to be shared among the beneficiaries of the sand (State and local government sponsor), the managers of the resource (MMS), and other Federal agencies with an interest in the results of a monitoring effort. For instance, monitoring studies may provide valuable data for identifying essential fish habitat (EFH) in the Federal OCS, thus NMFS should be involved in funding, study design, and interpretation. One of the more important functions of the State/MMS Sand Management Task Force will be to develop appropriate monitoring requirements and identify funding sources to support them. Without funds to support long-term monitoring of potential impacts, MMS will not be able to meet its responsibility to ensure that the OCS sand use does not adversely affect the marine and human environments. This lack of funds is a critical gap in the overall program.

MMS has already started work on improving monitoring program design. They funded a study to design a monitoring program that can be used to evaluate the potential physical and biological impacts resulting from the long-term use of OCS sand, and prepare protocols for the monitoring plan elements (RPI et al., 2001). They will fund a test of these protocols in 2002. It should be noted that the monitoring design includes post-dredging surveys at 1, 3, 5, and 7 years after the event, so long-term monitoring will be required until impacts and recovery rates are better defined. Funding is needed not only for data collection and analysis, but also for long-term data management, interpretation, and synthesis, so the results can be used to support resource management decisions. The USACE Regional Sediment Management Program recognized the importance of long-term data management in that one of the priority products is a regional data management and Geographic Information System. MMS should support similar data management strategies for the wealth of environmental data being collected as part of the monitoring programs.

### **3.5 An Implementation Plan**

The development of a plan to manage the Federal offshore borrow sites in an environmentally responsible and cost-effective manner over the long term will itself be a long-term process. MMS is in the position of being able to develop management strategies in the early stages of resource utilization. However, this means that many of the management issues are poorly understood, impacts are unknown, and the tradeoffs cannot be fully evaluated. The process should be started now, so that it can be refined through practice. Outlined below is an implementation plan to start the process.

#### **1. Identify a State or area to formalize the first Sand Management Task Force.**

Implementation should begin with the State that has made the most progress in terms of offshore data collection, organization, and personnel resources, and a strong interest in OCS sand resources. It appears that New Jersey would be the best candidate. The State should be approached with the overall concept, and they need to agree to take on the administrative responsibilities. A formal cooperative agreement should be signed between MMS and the State.

## **2. Write a draft charter for the Sand Management Task Force.**

Prior to the first meeting, MMS and key staff from the State should prepare a draft charter for the SMTF and send it out for review by all members. The charter should specify the following:

- objectives of the SMTF
- membership
- roles and responsibilities of all members
- frequency of meetings
- a communications plan for exchanging information
- protocols for adopting “best management practices” and “pre-approvals”
- a priority list of activities and products and a timeline for their completion

The SMTF composition should include private industry, such as dredgers, coastal planning consultants, and engineering firms, as well as government agencies and non-governmental organizations, such as commercial fishery associations and recreational user groups. A potential list of participants in a New Jersey SMTF would include:

- NJ Department of Environmental Protection (DEP) Geological Survey
- NJ DEP Bureau of Coastal Engineering and Construction
- NJDEP Office of Coastal Planning & Program Coordination
- NJDEP Division of Fish and Wildlife
- NJDEP Historic Preservation Office
- MMS INTERMAR
- USACE New York District
- USACE Philadelphia District
- US Fish and Wildlife Service
- National Marine Fisheries Service
- Mid Atlantic Fisheries Management Council
- Dredging Industry representatives (Weeks Marine and American Dredging)
- Garden State Seafood Association
- National Fisheries Institute
- North Atlantic Clam Association
- Rutgers Cooperative Extension Service
- New Jersey Marine Fisheries Council
- Commercial Fishing Communications Association

## **3. Conduct the first SMTF meeting.**

Discussion, revision, and adoption of the charter should be the first actions of the SMTF. The list of products and priorities will be unique to each State, but should include a core list of activities that will apply to all States. The SMTF should identify funding for the priority activities and assign activities to specific agencies for completion.

#### **4. Develop a priority list of States and relevant parties in each State.**

MMS should identify those States where formation of a SMTF is feasible at this time. Feasibility criteria include: strong interest in accessing OCS sand, inventory of the future sand needs, inventory of the possible OCS sand sources, and a State agency willing and capable of taking the administrative lead. Potential members should be identified in each State. Each State should be approached with the SMTF concept and invited to form cooperative agreements. The charter of the first SMTF would be the basis for the proposed organization and functions. States that might be conducive to a regional management approach include:

- New Jersey (possibly could expand in the future to include New York because of the involvement of the New York District in New Jersey and the locations of potential OCS borrow sites)
- Maryland/Delaware (Indian River Inlet borrow area straddles both states)
- Virginia (Sandbridge Shoal obviously represents major borrow site for Virginia Beach resort strip, Sandbridge Beach, and Dam Neck for foreseeable future – the planned monitoring protocols field test will be done here in cooperation with VIMS)
- North Carolina (high USACE interest in Federal borrow sites)
- Florida (high interest by State and local agencies in OCS sand)
- Texas/Louisiana (Sabine Bank will serve as borrow site for both states)

#### **5. Conduct SMTF meetings in the priority States over the next year.**

MMS should participate in all of the initial meetings and offer as much support as possible during the initial activities of each task force. This support could include bringing experts to make technical presentations of results of monitoring and assessment programs from other areas, drafting of language for procedures and protocols, synthesis of previous studies into "white papers" or technical summaries on specific issues, updating and maintenance of the MMS web site, and draft guidelines for emergency approvals. It is estimated that technical support to SMTFs, outside of MMS staff and travel costs, would be, at a minimum, about \$100,000 per year. MMS-INTERMAR has no money at the present time to provide technical support to an SMTF.

#### **6. Evaluate the process and make modifications as necessary.**

At the end of the year, MMS should evaluate the effectiveness of the SMTFs, individually and as a group, and make recommendations for how the process should be improved. MMS should also evaluate its funding needs to provide sufficient support to SMTFs in terms of staffing, travel, contractor support, and funding of specific studies.



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## **Appendix A**

MMS Presentation at the Regional Sand Management Workshops

Houston, Texas, 1 May 2001

Trenton, New Jersey, 30 May 2001

Regional Management Workshops

By

Barry Drucker

International Activities and Marine Minerals Division

Minerals Management Service

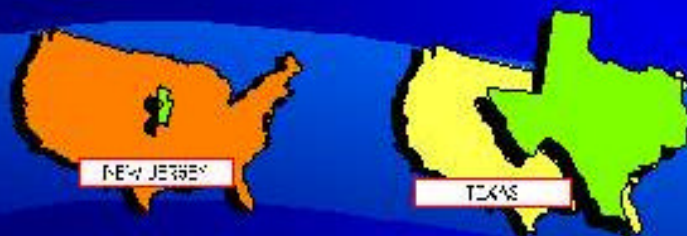
U.S. Department of Interior

Herndon, Virginia



## **Regional Management Workshops**

- **Houston, Texas: May 1, 2001**
- **Trenton, New Jersey: May 30, 2001**



## **PUBLIC LAW 103-426**



- Allows MMS to grant noncompetitive leases for Federal sand, gravel, or shell resources for use in shore protection projects
- Shore Protection Provisions of the Water Resource Development Act of 1999 amended law - prohibits charging non-Federal interests a fee for using OCS sand.

## Building the Foundation



- \$4.6 million total for geology through FY01 (includes Texas)
- \$6.2 million total for environmental studies

## What's Been Conveyed Thus Far

WHAT'S BEEN CONVEYED THUS FAR

State	Locality	Cubic yards of sand
FLORIDA	Jacksonville (Duval County)	1,240,000
SOUTH CAROLINA	Myrtle Beach (Surfside)	150,000
VIRGINIA	Dan Neck Naval Facility	800,000
VIRGINIA	Sandbridge Beach	1,090,000
MARYLAND	Assateague National Seashore	130,000
FLORIDA	Brevard County	4,500,000
FLORIDA	Patrick Air Force Base	600,000

### PENDING:

!Corsons Inlet, New Jersey

!Ship Shoal for LA demo project

!Brevard County

!Assateague Island, Maryland





## Major Sand and Gravel Initiative

- Moving towards a regional management approach for OCS sand and gravel areas



## Regional Management Initiative

- **Customer:** Form strong collaborative partnerships so that OCS sand is used in an environmentally sound and cost-effective manner
- **Financial:** Demonstrate cost savings and value added through regional area management



## Regional Management Issues

- Many OCS sand sources to be used on a continual, multi-year, multi-use basis: MMS must ensure that long-term adverse impacts to the marine and coastal environment do not occur.



## Regional Management Issues

- Cost-effectiveness can be achieved through regional management with all relevant parties participating







## **Monitoring Design/Regional Management Study**

- Awarded to RPI in April 2000
- Two tasks:
  - Provide MMS with appropriate and sound designs for physical/biological monitoring systems to evaluate the near-term, long-term, and cumulative effects of using Federal sand borrow areas on the U.S. East and Gulf Coasts
  - Regional management examination/feasibility task



## **Regional Management Task**

- **Charge to RPI (Year 1):** Examine the feasibility/desirability of incorporating Federal, State, and local players with different interests and authorities in such a way that they benefit from an overall strategy to develop ways to assure and monitor the responsible, environmentally sound long-term and cost-effective management of Federal offshore sand areas and identify the relevant parties and authorities who should participate.



## **Regional Management Task**

- **Charge to RPI (Year 2)** If, in Year 1 of the study, the study team determines that it is feasible and appropriate to manage Federal offshore sand resources on a regional basis, develop detailed plans and fully identify the relevant parties by geographic area to meet the needs of Federal, State, and local interests to facilitate the environmentally acceptable and cost-effective near and long-term use of Federal sand borrow areas offshore the U.S. East and Gulf of Mexico coasts.



## **Objectives of the RM Workshops**

- Overview of various parties roles re: beach nourishment activities
- Begin to evaluate if regional management is feasible/advisable/acceptable to various parties involved in process
- Explore ways in which various entities might interact to achieve RM objectives



## Case-in-point

### *Sandbridge Shoal, VA*

- Present/future source of sand for three entities: VA Beach resort strip; Navy facility at Dam Neck; Sandbridge Beach



## Sandbridge Shoal: Past Usage

- Navy: 800,000 cubic yards (1996-\$4 million)
- Sandbridge Beach: 1.1 million cubic yards (1998-\$9 million)





## **Sandbridge Shoal: Future Anticipated Usage**

- Sandbridge Beach: 1.5 million cubic yards in 2002
- Navy: 500,000 cubic yards in 2003
- Virginia Beach Resort Strip: ?



## **Sandbridge Shoal Issues**

- Given future use of shoal - how best to manage to avoid/minimize adverse effects to biota/physical environment
- Manage resource to lessen dredging costs to various entities (such as mobilization costs)



**Appendix B**  
**Participants in the MMS OCS Sand Management Planning Workshop**  
**1 May 2001, Houston, Texas**

<b>Agency</b>	<b>Name/Title</b>	<b>Address</b>	<b>Phone/Email</b>
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## **Appendix C**

Oil & Gas Infrastructure Issues  
Presentation at the Houston Regional Sand Management Workshop  
Houston, Texas  
1 May 2001

Regional Management of Federal  
Offshore Barrow Areas Along US  
East and GOM Coasts  
Oil & Gas Infrastructure Issues  
OCS Sand Borrow Sites

By

Alex Alvarado  
MMS New Orleans

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## Regional Management of Federal Offshore Barrow Areas Along US East and GOM Coasts

Oil & Gas Infrastructure Issues  
OCS Sand Barrow Sites  
Alex Alvarado

**MMS**

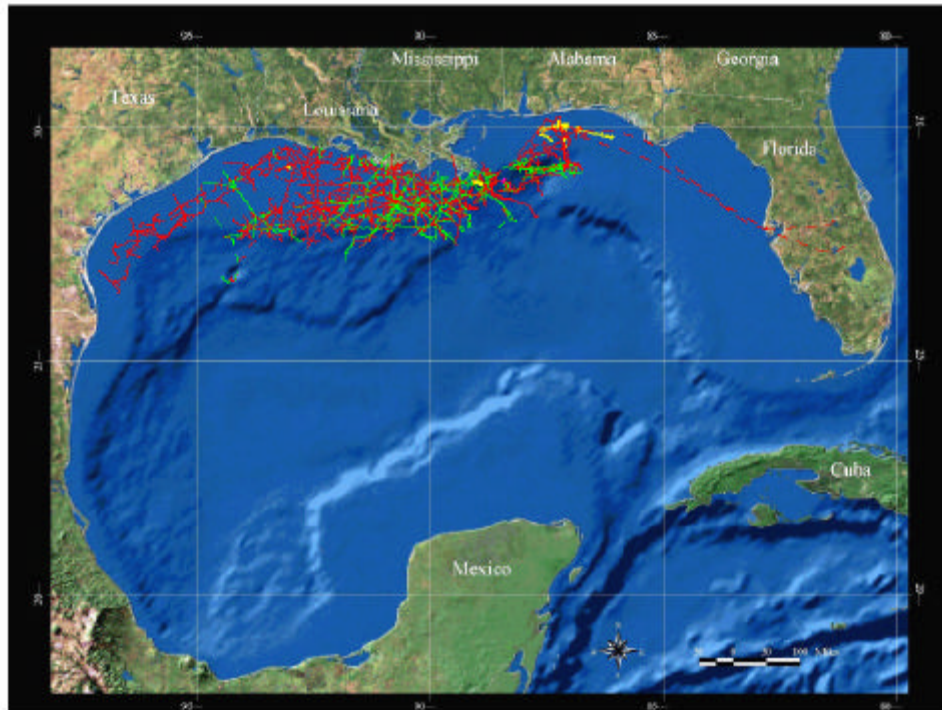
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## Pipeline Infrastructure

- 31,500 miles of pipelines in GOM 3/21/2001
- MMS pipeline maps digitized
  - » Data points available through MMS web site
    - [www.gomr.mms.gov](http://www.gomr.mms.gov)
- GOM presently produces 1.4 MMBB/D & 13.057 BCF/D
- OCS produced 29% of gas & 20% of oil produced in US

**MMS**





## Platforms/Wells Infrastructure

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- 4,005 active platforms 3/3/2001
  - » 13,110 active wells(boreholes) associated with these platforms
- 2,018 platforms removed 3/3/2001
  - » 22,965 wells(boreholes) plugged and abandoned

**MMS**

## Overview

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- Mining site oil & gas infrastructure
- Beach restoration site infrastructure
- Site clearance and buffer zones
- Site conditions after sand extraction

**MMS**

## Mining site oil & gas infrastructure

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- Pipelines
  - 90 % of total mileage active
  - Decommissioned lines are abandoned in place
  - Buried
    - 3 ft out to 200 ft water depth (MMS)
    - 10 ft in fairways (COE)
    - 16 ft in anchorage areas (COE)
- Cables?

**MMS**

## Mining site oil & gas infrastructure-Cont.

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- Platforms

- Single well caissons to multi well structures
  - All are visible
  - » There are few subsea well completions

**MMS**

## Beach restoration site infrastructure

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- Site will have to be cleared of any pipelines making land fall
  - » Estimate 190 pipelines making land fall from OCS
    - Texas ~20
    - Louisiana ~150
    - Mississippi ~10
    - Alabama ~ 10
- MMS has limited data on these areas
  - » Working with states to gather data

**MMS**



## Beach restoration site infrastructure- Cont.

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- DOT has ongoing pipeline mapping project (voluntary)
  - » Can go to web site to view maps
    - [www.npms.dot.gov](http://www.npms.dot.gov)

**MMS**

## Site clearance & buffer zones

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- Appropriate site clearance surveys will have to be conducted
  - » Mining site
  - » Restoration site
- Buffer zones from surface and subsurface active/decommissioned facilities will have to be established
  - » Mining site
  - » Restoration site?

**MMS**

## Site clearance & buffer zones- Cont.

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- Coordination
  - » Near structure owners
  - » Lessees

**MMS**

## Site condition after sand extraction

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- Bottom soil stability and profile?
- Laying of new pipelines?

**MMS**

## Conclusions

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- From the oil & gas point of view the most important issues are:
  - » Site clearance at the mining and restoration sites
  - » Establishment of buffer zones
  - » Coordination with appropriate agencies and structure owners

**MMS**

**Appendix D**  
**Participants in the MMS OCS Sand Management Planning Workshop**  
**30 May 2001, Trenton, New Jersey**

<b>Agency</b>	<b>Name/Title</b>	<b>Address</b>	<b>Phone/Email</b>
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